Compound Wing Long Endurance V/TOL UAS

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Purpose

Today's users of small UAS typically are forced to choose between using limited endurance V/TOL craft or fixed-wing vehicles which impose significant limitations on operating areas. In both cases, users are limited in the types of weather environments they can operate within, usually meaning very benign wind conditions. ***The proposed concept combines a tilt-wing segment V/TOL concept with a free-to-rotate outer wing segment to obtain a high-aspect ratio efficient cruise vehicle with V/TOL capability for ease of operation.***

Background

Small UAS users typically face a poor choice of platforms when considering missions which may require V/TOL operation. If they choose a typical "quadcopter" for the mission, the endurance available is typically limited to 30 minutes to 1 hour. On the other hand, most fixed wing small UAS require significantly large takeoff and landing clear areas. Further complicating the choice is that neither of these light, small UAS platforms handle high winds or gusty conditions well, thus limiting the operational utility of the whole genre.